SIROTOV, K.M.

Ocean swell.  Okeanologiia 3 no.4:633-637  '63.   (MIRA 16:11)

1. Gosudarstvennyy okeanograficheskiy institut.

SIROTOV, V.A.

Size of drying boxes and methods of determining the humidity of bread.
Vop.pit. 13 no.5:48-49 S-O '54.                                              (MLRA 7:9)

1. Iz laboratorii 3-y sanitarno-epidemiologicheskoy stantsii (Alatyr'
Chuvashskoy ASSR)
            (Bread)

Sirotov, V.I.

137-1958-2-2197

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 1 (USSR)

AUTHOR:   Sirotov, V.I.

TITLE:    A.A. Iznoskov - Pioneer of the Open-hearth Process in Russia
          (A.A. Iznoskov - pioner martenovskogo proizvodstva v Rossii)

PERIODICAL  Tr. Nauchn. stud. o-va. Gor'kovsk. politekhn. in-t, 1957, Nr 1,
            pp 60-63

ABSTRACT    An account is given of the accomplishments of A.A. Iznoskov,
            who built an open-hearth furnace in Russia in the year 1870.
            General information concerning the first Russian open-hearth
            furnace is included.
                                              P.N.

            1. Metallurgy—Conference—USSR

Card 1/1

SIROTOV, I.I., dots.; SIROTOV, V.I., inzh.; MASLENKOV, F.N., dots.;
STUPNEV, G.K., ofitsial'nyy retsenzent; SULIMOV, A.N., red.;
PLESKO, Ye.P., red. izd-va; SHIBKOVA, R.Ye., tekhn. red.;
GRECHISHCHEVA, V.I., tekhn. red.

[Forest exploitation]Lesoekspluatatsiia. Moskva, Goslesbum-
izdat, 1962. 359 p.                          (MIRA 15:11)

1. Direktor Krestetskogo  lesopromyshlennogo khozyaystva
TSentral'nogo nauchno-issledovatel'skogo instituta mekhani-
zatsii i energetiki lesnoy promyshlennosti (for Stupnev).
                        (Lumbering)

SIROTOVA, T.S.

Change in the permeability of the capillaries in pneumonias in
children. Pediatriia  no.9 33-37 '61.                    (MIRA 14:8)

1. Iz kafedry pediatrii (zav. - prof. E.A. Gornitskaya) I Lenin-
gradskogo meditsinskogo instituta imeni I.P. Pavlova (dir. -
dotsent A.I. Ivanov).
             (CAPILLARIES—PERMEABILITY) (PNEUMONIA)

SIROTS, Y. A.

**Electrodes for Welding Structural Steels.** (In Russian.) S. K. Zveg'intsev and E. A. Sirots. *Avtogennoe Delo* (Welding), v. 21, Aug. 1950, p. 23-27.

Describes characteristics of four electrodes used for welding low-alloy structural steels. Basic characteristics of the compositions are use of basic coatings containing marble, fluorspar, etc., as slag formers; presence of ferroalloys (ferrosilicon, ferromanganese, ferrotitanium) of the fused metal; and low content of harmful impurities (sulfur and phosphorus). Welding cl 'ristics of individual electrodes were determ.

PALAMARCHUK, Maksim Martynovich, kand. ekonomichnykh nauk.; SIROTSINSKIY, K.Ye., [SIROTSINS'KYI, K.IE], prof. doktor ekonomichnykh nauk, red.; HERZLIKIN, I.G., red.;

[Development of sugar beet growing and the sugar industry in the Ukraine] Rozvytok buriakkosiiannia i tsukrovoi promyslovosti na Ukraini. Kyiv, 1958. 39 . (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan' Ukrains'koi RSR. Ser. 2, no.7)               (MIRA 11:8)
          (Ukraine--Sugar industry)

LUKINOV, Ivan Illarionovich, kand.ekon.nauk; SIROTSINSKIY, K.Ye. [Syrotsyns'kyi,
K.IE.), prof., doktor ekon.nauk, red.; MERZLIKIN, I.O. [Merzlikin,
I.H.], red.

[Labor productivity in agriculture and ways of increasing it]
Produktyvnist' pratsi v sil's'komu hospodarstvi i shliakhy ii pidvy-
shchennia. Kyiv, 1958.  70 p. (Tovarystvo dlia poshyrennia poli-
tychnykh i naukovykh znan' Ukrains'koi RSR.  Ser.3, no.15-16)

(MIRA 12:3)

(Labor productivity)     (Agriculture)

IONUSHAYT, Karl-Geynts [Ionushait, Karl-Heints], doktor; SIROTSINSKIY,
K.Ie. [Sirotsyns'kyi, K.IE.]; glavnyy red.; IGOSHKIN, G.S.
[Igoshkin, H.S.], glavnyy red.

[Socialist reforms in the German Democratic Republic] Sotsia-
listychni peretvorennia v Nimets'kii Demokratychnii Respublitsi.
Kyiv, 1959. 79 p. (Tovarystvo dlia poshurennia politychnykh i
naukovykh znan' Ukrains'koi RSR. Ser.3, no.8-9)    (MIRA 12:12)

1. Chlen-korrespondent Akademii sel'skokhozyaystvennykh nauk
USSR (for Sirotsinskiy).
          (Germany, East--Economic conditions)

CHERVENKO, K.; SIROTSKIY, I.

Disconnecting the gasoline pump of gas generating and gas cylinder
automobiles.  Avt.transp. 32 no.4:35 Ap '54.                (MLRA 7:6)
     (Automobiles--Gas producers) (Automobiles--Engines (Compressed-gas))

USSR/Engineering                                    Mar 1948
    Shipping - Industry
    Machine    Hoisting

"Calculations for Hoisting Devices Which Hold Loads
by Means of Friction," V. Sirotskiy, TsNIIMF, 52 pp

"Morsk Flot" No 3

Presents various formulas to calculate permissible
loads for several types of grapplers (grappling
hooks for lifting loads).

61T50

RE-ISSUED FROM THE INST MARITIME FLEET, LENINGRAD

STROMETY, V. F., ET AL.

TECHNOLOGY

Peredvizhnaia laboratoriia dlia ispytaniia pod''emno-transportnykh mashin v ekspluatatsionnykh uslov'iakh (Mobile laboratory for testing hoisting and hauling machines under work conditions). Moskva, Morskoi transport, 1951. 38 p.

SIROTSKIY, V.

Brief summary of the study of the work of efficient dock crane operators.
Mor.i rech.flot 13 no.8:4-7 D '53.                                (MLRA 6:12)
                    (Cranes, derricks, etc.)  (Cargo handling)

SIROTSKIY, V.

Brief results of the study of the work of efficient dock crane opera-
tors.  Mor.i rech.flot 14 no.1:9-12 Ja '54.                    (MLRA 7:1)
              (Cranes, derricks, etc.)  (Cargo handling)

SIROTSKIY, V., kandidat tekhnicheskikh nauk.

Operation of harbor cranes. Mor. i rech.flot 14 no.5:9-10
My '54.                                                  (MLRA 7:7)

1. Leningradskiy institut inzhenerov vodnogo transporta.
   (Cranes, derricks, etc.)

Name:  SIROTSKIY, Viktor Filippovich

Dissertation:  Dynamic processes in intensively
operated port rotating cranes

Degree:  Doc Tech Sci

Affiliation:  /not indicated/

Defense Date, Place:  1 Jul 55, Council of Leningrad Inst of
Engineers of Water Transport

Certification Date:  7 Sep 57

Source:  BMVO 22/57

43

SIROTSKIY, V.F.

Organizing research in the field of mechanizing harbor
operations.   Rech. transp. 15 no.9:15-16 S '56.    (MLRA 10:2)

(Cargo handling) (Harbors)

AUTHOR:     Sirotskiy, V. F.

TITLE:     The Stresses Produced in a Rotary Crane by the Swinging of Its Load (Nagruzki na povorotnyye krany, vyzyvayemyye raskachivaniyem gruza)

PERIODICAL:     V sb.: Vopr. teorii i rascheta pod"yemno-transp. mashin. Moscow-Leningrad, Mashgiz, 1957, pp 48-74

ABSTRACT:     The author examines the oscillations of a crane's load under different operating conditions of the crane. The crane is regarded as a rigid system from which a mass load is suspended on a nontensible thread. Under this premise the oscillations of the load are determined by the motion of the point of support and by the change in the suspension length of the supporting cable. When the cable's deviations from the vertical do not exceed angles of 20-25°, the oscillations of the load are considered to be small. The equations of motion of the load are written in terms of the relative coordinates and are solved for the two cases in which the suspension length of the supporting cable is lengthened or shortened, 1) at a constant speed, and 2) at a constant

Card 1/2

SOV/124-58-11-12152

The Stresses Produced in a Rotary Crane by the Swinging of Its Load

'acceleration. To do this, the author uses cylindrical functions of the first and second kinds and their asymptotic representations.

V. M. Makushin

Card 2/2

SIROTSKIY, V.F., kand.tekhn.nauk.

Effect of characteristic rigidity of an engine on the movements of crane mechanisms. Trudy TSNIIMF no.11:55-60 '57.     (MIRA 11:2)
(Cranes, derricks, etc.)
(Power (Mechanics))

AUTHOR:    Sirotskiy, V. F.

TITLE:    The Combined Action of Longitudinal and Transverse Loads on the
Boom of a Crane  (Sovmestnoye deystviye prodol'nykh i poperechnykh
nagruzok na strelu krana)

ABSTRACT:    An investigation of the flexure, compression, and twisting of a pris-
matic boom having a constant cross section leads to two linear differ-
ential equations of fourth order having a right-hand part in the form of
a second-power polynomial.  The solution yields an expression for the
bending moments acting upon the boom of the crane.  The author then
solves the problem of the flexure and compression of the boom of a
crane having a variable section.  The author obtains a refined bending
moment for a boom of the assumed structural configuration, provided
that not only the compressive but also the bending action of the longi-
tudinal force is taken into account, when the boom is bent  owing to
the action of a bending moment and a transverse force.

Card 1/1                                            N. P. Dinnik-Grishkova

SIROTSKIY, V.F., doktor tekhn. nauk; ARTEM'YEV, P.P., kand. tekhn, nauk; OKHOTOV, P.P., inzh.

Operational cycle of harbor cranes. Rech.transp. 17 no.9:20-22
S '58.                                            (MIRA 11:11)
        (Cranes, derricks, etc.)  (Harbors)

SIROTSKIY, V.F.

Dynamic loads on jib units of swing cranes. Nauch. dokl. vys. shkoly;
mash. i prib. no.2:57-65  '59.                    (MIRA 12:12)
            (Cranes, derricks, etc.)

SIROTSKIY, V.F., doktor tekhn.nauk; GRIGOR'YEV, N.I., inzh.; ARTEM'YEV, P.P., kand.tekhn.nauk

Angles of declination of cargo cables of portal cranes during operation.
Rech.transp.  18 no.7:19-21 Jl '59.                         (MIRA 12:11)
                    (Cranes, derricks, etc.)

SIROTSKIY, V.F., doktor tekhn.nauk, prof.; ARTEM'YEV, P.P., kand.tekhn.
nauk, dotsent

Time length of gantry crane cycles.  Trudy LIVT  no.4:3-7  '60.
(MIRA 15:3)
(Cranes, derricks, etc.)

ANAN'YEV, A.A.; GOKHBERG, M.M.; DUKEL'SKIY, A.I., prof., doktor tekhn. nauk;
    LANG, A.G.;MAYZEL', V.S.; MEKLER, A.G.; SIROTSKIY, V.F.; KOGAN, I.Ya.,
    kand. tekhn. nauk, retsenzent; REYNGOL'DT, Yu.A., kand. tekhn. nauk,
    retsenzent; SAMOYLOVICH, P.A., kand. tekhn. nauk, red.

    [Reference book on cranes] Spravochnik po kranam.  Pod red. A.I.Dukel'-
    _skogo.  Moskva, Mashgiz. Vol.1. [General design, materials, drives,
    metal constructions] Obshchie raschety, materialy, privody, metalliche-
    skie konstruktsii. By A.A.Anan'ev i dr.  1961.  455 p.    (MIRA 14:11)
                        (Cranes, derricks, etc.)

SIROTSKIY, V., doktor tekhn. nauk; BORODKIN, B., kand. tekhn. nauk

Contribution to industry by scientists of the Leningrad Institute
of Water Transportation. Rech. transp. 21 no.10:19-20  O '62.
                                        (MIRA 15:10)

(Inland water transportation—Research)

DMITRIYEV, Valentin Aleksandrovich, doktor tekhn.nauk, prof.;
        DOLGOLENKO, Anatoliy Aleksandrovich, doktor tekhn.nauk,
        prof.; MARKOV, Vladimir Georgiyevich, kand.tekhn.nauk, dotsent;
        SMIRNOV, Sergey Aleksandrovich, kand.tekhn.nauk, dotsent;
        SIROTSKIY, V.F., doktor tekhn.nauk, prof., retsenzent:
        MAL'TSEV, V.N., kand.tekhn.nauk, dotsent, retsenzent;
        VORONKOVSKAYA, A.P., red.; VOLCHOK, K.M., tekhn. red.

[Theory of mechanisms and machines, machine parts and hoisting-
conveying machinery] Teoriia mekhanizmov i mashin, detali mashin
i pod"emno-transportnye mashiny. Leningrad, Izd-vo "Rechnoi tran-
sport," 1963.   580 p.                           (MIRA 16:6)
        (Mechanical engineering) (Hoisting machinery)
                    (Conveying machinery)

KOSTOVETSKIY, Ya.I.; SIROTSKIY, V.V.; KHIL'CHEVSKIY, N.I.

Establishing hygienic norms in case of the combined action of cyanides and pyridines in the water of reservoirs and rivers. San. okhr. vod. ot zagr, prom. stoch. ved. no.6:280-289 '64.

(MIRA 18:3)

1. Ukra'nskiy nauchno-issledovatel'skiy institut kommunal'noy gigiyeny.

GRINGOL'TS, L.A.; KOZYREV, S.M.; SIROTTA, B.L.; FILINA, M.D.; YURKEVICH,
V.S.; GUREVICH, Ya.D., redaktor; BEKMAN, Yu,K., vedushchiy
redaktor; POLOSINA, A.S., tekhnicheskiy redaktor

[Manual of wages in the petroleum industry] Spravochnik po
zarabotnoi plate v neftianoi promyshlennosti. Izd. 2-oe, perer.
i dop. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-
toplivnoi lit-ry, 1956. 342 p.                       (MIRA 9:10)
        (Wages)   (Petroleum industry)

KRIVENKO, M.G., red.; SIROTTA, B.L., red.; USHAKOVA, A.F., ved. red.;
VORONOVA, V.V., tekhn. red.

[Uniform time norms for drilling exploratory, structural,
and geological wells] Edinye normy vremeni na burenie raz-
vedochnykh, strukturno-poiskovykh i kartirovochnykh skvazhin.
Moskva, Gostoptekhizdat, 1963.  127 p.            (MIRA 16:7)

1. Moscow. TSentral'noye byuro promyshlennykh normativoy  po
trudu.
                        (Boring)

L 9797-66   EWT(1)/EWA(h)   GG

ACC NR: AP5028509                           SOURCE CODE: UR/0286/65/000/020/0095/0095

AUTHORS: Sukhomlinov, M. M.; Pelipenko, N. I.; Ferenets, M. K.; Onishchenko, E. L.;
Shikalov, V. S.; Gorban', A. M.; Sirotyan, V. G.

ORG: none

TITLE: A memory device with magnetostrictive delay lines. Class 42, No. 175749
/announced by Institute of Automation of the State Committee on Instrument Manufac-
ture and Means of Automation and Control Systems of Gosplan, SSSR /Institut
avtomatiki gosudarstvennogo komiteta po priborostroyeniyu i sredstvam avtomatiki i
sistemam upravleniya pri gosplane SSSR)_/

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 95

TOPIC TAGS: electromagnetic memory, circuit delay line, storage device

ABSTRACT: This Author Certificate presents a memory device using magnetostrictive
delay lines. The device contains input and output converters, regeneration circuits,
and a synchronizing generator. In order to increase reliability, one of the digital
columns of the device is used as the synchronizer. Its regeneration circuit has two
input converters spaced at a distance equal to a prime wavelength number (excluding
two) (see Fig. 1). The distance between the input and output converters is not a
multiple of the distance between the input converters.

Card 1/2                                         UDC: 681.142:621.374.5
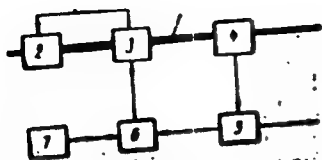
L 9797-66

ACC NR: AP5028509

Fig. 1.  1 – Magnetostrictive line;
2 and 3 – input converters;
4 – output converter;
5 – reading amplifier;
6 – shaper; 7 – circuit of a
single start-up.

Orig. art. has: 1 figure.

SUB CODE: 09/ SUBM DATE: 29Sep64

Card 2/2

L 00405-67    EWT(d)/EWT(1)/EWP(v)/EWP(k)/EWP(h)/EWP(1)    GD

ACC·NR: AT6029231    SOURCE CODE:  UR/0000/66/000/000/0143/0152

AUTHOR: Sukhomlinov, M. M.; Ferenets, N. K.; Onishchenko, E. L.; Pelipenko, N. I.;
Shikalov, V. S.; Kholmskaya, Ye. V.; Sirotyan, V. G.; Dodonova, G. M.

58
B+1

ORG:  none

TITLE:  Digital-analog computer system using magnetostrictive delay lines

SOURCE:  Vsesoyuznaya konferentsiya-seminar po teorii i metodam matematicheskogo
modelirovaniya. 4th, Kiev, 1964. Vychislitel'naya tekhnika v upravlenii (Computer
technology in control engineering); trudy konferentsii. Moscow, Izd-vo Nauka, 1966,
143-152

TOPIC TAGS:  digital differential analyzer, circuit delay line, magnetostriction, com-
puter control system

ABSTRACT:  The authors describe the design and performance of a digital differential
analyzer using magnetostrictive delay lines as memory elements. The authors claim
that such a memory has the advantages of a high speed ferrite core memory and the econ-
omy of a magnetic drum. The digital differential analyzer has the following parameters:
32 integrators, binary operational code, 20 bit words, 250 KHz cycle rate, 400 opera-
tions per second, and error not exceeding 0.01%. The operational program and the ini-
tial conditions are entered manually through switches on a control console. The data
entry can be manual, using decimal or binary codes, or automatic. The digital

Card 1/3

L 06405-67

ACC NR:  AT6029231

differential analyzer consists of a memory, computational unit, control unit, input and output equipment, control console and code converters. Of particular interest is the design and performance of the memory. The memory uses eight magnetostrictive delay lines, shown diagrammatically in fig. 1. The lines circulate the initial conditions data, the program, the increments, the intermediate results, and other information. The electrical pulses are converted into accustical signals utilizing the magnetostrictive phenomenon. The acoustic material should be a nickel-iron-titanium alloy, which reduces the temperature effects on the delay time; in the absence of such material, nickel wire of medium hardness can be used. The diameter of the wire is very important. It determines the resolution of the delay line and the magnitude of the output signal. The thinner the wire, the better the resolution and the lower the output signal. An optimum diameter for a 250-1000 KHz signal rate is 0.5-0.8 mm. To reduce the reflection coefficient and physical dimensions, the delay line is formed into a flat Archimedes spiral housed in a flat cylindrical enclosure. The performance specifications for the ultrasonic delay line are as follows: operating frequency 50-1000 KHz, delay time 800-3000 microseconds, resolution 0.5-2 microseconds, signal-to-noise ratio greater than 4, and power consumption 1.5 w. The other functional units of the digital differential analyzer are described in detail. Block diagram and performance data are given. Orig. art. has: 1 table, 6 formulas, 4 figures.
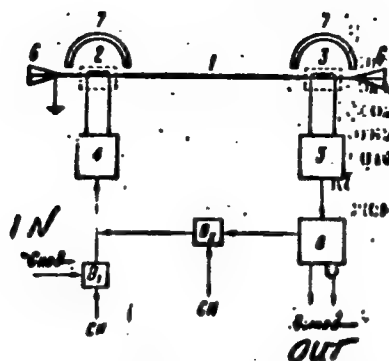
Card 2/3

L 06405-67

ACC NR: AT6029231

Fig. 1.  A block diagram of the memory unit
1 - ultrasonic delay line; 2 - the electro-acoustic transducer;
3 - receiving coil; 4 - the input driver; 5 - output amplifier;
6 - dampers; 7 - permanent magnets; 8 - pulse stretcher;
$B_1$ and $B_2$ - signal gates.

SUB CODE:  09/  SUBM DATE:  12Feb66/  ORIG REF:  005/  OTH REF:  000

Card 3/3

L 4497-66     EWT(1)/EWA(h)

ACC NR: AP5023274                          UR/0302/65/000/003/0035/0037
                                           534.232.45

AUTHOR: Gorban', A. M.; Gridin, G. K.; Dodonova, G. M.; Onishchenko, E. L.; Sirotyan, V. G.; Ferenets, N. F.; Kholmskaya, Ye. V.; Shikalov, V. S.; Sukhomlinov, M. M. (Candidate of Technical Sciences)

TITLE: Magnetostriction delay lines

SOURCE: Avtomatika i priborostroyeniye, no. 3, 1965, 35-37

TOPIC TAGS: magnetostriction, circuit delay line, ferromagnetic material, delay circuit

ABSTRACT: Magnetostriction delay lines are based on the fact that ferromagnetic materials transmit ultrasound with a speed which is lower than the speed of electrical signals through conventional circuits. The Institut avtomatiki Gosudarstvennogo komiteta po priborostroyeniyu, sredstvam avtomatizatsii i sistemam upravleniya pri Gosplane SSSR (Institute of Automation, State Committee for the Design of Instruments, Means of Automation, and Control Systems attached to Gosplan SSSR) developed three such delay lines with delay times of 80, 640, and 2560 $\mu$sec, respectively. The block diagram of the devices is shown in Fig. 1 of the Enclosure. The sound conductor is made of an "N-1, hard" nickel alloy wire 0.7 mm in diameter. Its Young's modulus is about $21,000 - 23,000$ kg/mm$^2$, specific density is 8.9 g/cm$^3$, ultrasound velocity is $4,750 - 5,050$ $\mu$sec, and the temperature coefficient of delay is $1.4 \cdot 10^{-4}$ per °C. The article presents the pertinent circuit diagrams and a detailed description of the delay line operation. Orig. art. has: 1 formula and 4 figures.

Card  1/2

L 4497–66

ACC NR: AP5023274

ASSOCIATION: none

SUBMITTED: 00          ENCL: 01          SUB CODE: EC, IE

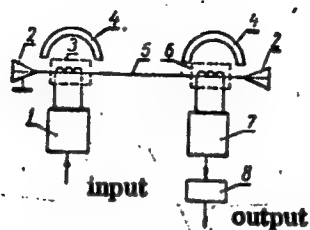NO REF SOV: 002        OTHER: 000

Card 2/3

L 4497-66

Figure 1.   Block diagram of the magnetostriction delay line = 1 – Input signal shaper;
2 – muffler; 3 – transmitter magnetostriction converter; 4 – permanent magnets;
5 – sound duct; 6 – receiver magnetostriction converter; 7 – output signal amplifier;
8 – pulse spreader.

Card 3/3

ANTONOV, Ivan Aleksandrovich; BEREZINA, Mariya Nikitichna;
SIROTYUK, A.K., retsenzent; KULIKOVA, T.I., retsenzent;
SHUMAGINA, V.I., red.

[Technology of the manufacture of men's coats] Tekhnologiia
izgotovleniia muzhskikh pal'to. Moskva, Legkaia industriia,
1965. 203 p.                                      (MIRA 18:9)

BARON, L.I., prof., doktor tekhn. nauk; SIROTYUK, G.N., gornyy inzh.

Estimation of the resistance of rocks to being broken by dynamic loads. Vzryv. delo no.53/1C:6-16 '63.          (MIRA 16:8)

1. Institut gornogo dela im. A.A. Skochinskogo (for Baron).
2. Kol'skiy filial AN SSSR im. S.M. Kirova (for Sirotyuk).
         (Rocks—Testing)       (Blasting)

L 17972-65    EWT(1)/EWA(b)    Pa-4    AMD    JK

ACCESSION NR: AP5002643                                         S/0016/64/000/010/0116/0120

AUTHOR: Sirotyuk, L. V.

TITLE: Biological properties of NIIEG tularemia vaccine strains

SOURCE: Zhurnal mikrobiologii, epidemiologii i immunobiologii, no. 10, 1964, 116-120

TOPIC TAGS: serum, immunology

Abstract: Strains No 10, 33, and 53 of the NIIEG /Scientific Research Institute of Epidemiology and Hygiene/ tularemia vaccine retained their biological characteristics after 10 years' storage in dry form (in a saccharose-gelatin medium). Strains No 10 and 53 proved harmless for guinea pigs and highly immunogenic in white mice and guinea pigs, but they had a higher residual virulence for white mice than Gayskiy's standard strain No 15. NIIEG strains No 10 and 53 are recommended as reserves for the production of live tularemia vaccine, while strain No 33 cannot be recommended for this purpose. Orig. art. has 2 tables.

Card 1/2

L 17972-65
ACCESSION NR: AP5002643

ASSOCIATION: Gosudarstvennyy kontrol'nyy institut meditsinskikh biologicheskikh preparatov im. L. A. Tarasevicha (State Control Institute of Medical Biological Preparations)

SUBMITTED: 07Aug63                ENCL: 00                SUB CODE: LS

NO REF SOV: 004                    OTHER: 00                JPRS

34503

S/169/62/000/002/041/072
D228/D301

3.5000

AUTHORS: Markovich, M. L., Muchnik, V. M. and Sirotyuk, L. Y.

TITLE: Some data on the structure and development of thunder-storm showers obtained on the basis of radar measure-ments

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1962, 27, ab-stract 2B204 (Tr. Ukr. n.-i. gidrometeorol. in-ta, no. 26, 1961, 47-57)

TEXT: Adjusting the receiver amplification the authors obtained different boundaries of shower foci and determined the cloud-echo value Z at these boundaries. Using an empirical correlation con-necting Z with the precipitation intensity I ($Z-\beta I^{\alpha}$) the appro-priate precipitation intensity I was ascertained. The coefficients $\beta = 1.69$ and $\alpha = 3.27$ were found from the data of 88 cases of rain observations at Kiyev in 1958 and 1959. The ratio of the receiver's sensitivity to the power emission magnitude was controlled by

Card 1/ 3

Some data on ...

S/169/62/000/002/041/072
D228/D301

means of an echo-device fixed at a distance of 2 m from the aerial.
During the observations the screen was photographed at 10 different
gradations of the receiver's sensitivity (approximately every 2 --
3 db). The full section of the focus for all gradations was accom-
plished in 60 sec. The intervals during the photographing amounted
to 10 - 15 min. Photographs of foci with clear boundaries at all
sensitivity gradations were selected for analysis. The exponential
dependence of the precipitation intensity on the distance to the

focal center -- $I = b \times a^r$ -- is established from observations
on 57 foci during 11 days with rain. Divergences from the exponen-
tial law are noted for peripheral and central parts of a focus. It
is apparent from the data adduced in a table that the magnitudes
of "a" and "b" vary from case to case in broad limits and have to
be found separately for each focus. When considering the rate of
focal development and attenuation the authors established that the
area of a focus grows (during its development) or diminishes (dur-
ing its attenuation) linearly with time. The areas of foci, enve-
loped by the isolines of equal precipitation intensity, also grow

Card 2/3

SIROTYUK, L.V.

Biological properties of tularemia vaccine strains produced by the
Scientific Research Institute for Epidemiology and Hygiene. Zhur.
mikrobiol., epid. i immun. 41 no.10:116-120  '64.

(MIRA 18:5)

1. Gosudarstvennyy kontrol'nyy institut meditsinskikh biologi-
cheskikh preparatov imeni Tarasevicha.

SIROTYUK, M. G.

M. A. Isakovich and M. G. Sirotiuk.  A variant of the Tepler method applied to the observation of ultra sound fields.  P. 715.

Jan. 24, 1951

SO:  Journal of Technical Physics, Vol. XXI, No. 6, June 1951

SIROTYUK, M.

USSR/Electronics - Television          Mar 52
                    Video Amplifiers

"A New Video Amplifier Cirucit,"  Yu. Semennikov,
M. Sirotyuk

"Radio" No 3, pp 31-34

Describes a new system for correcting the fre-
quency response of video amplifiers based on the
use of neg feedback instead of correcting coils.
States that good results were obtained with a
2-tube amplifier in which the 1st stage is un-
corrected while the 2d is corrected to give a
uniform over-all frequency response for both
stages.                                  229T65

SIROTYUK, M.G.

Moscow. Dom nauchno-tekhnicheskoy propagandy

Primeneniye ul'trazvuka v promyshlennosti; sbornik statey (Industrial Use of Ultrasound; Collection of Articles) Moscow, Mashgiz, 1959. 301 p. 8,000 copies printed.

Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed. (Title page): V.P. Mozdrev, Doctor of Physical and Mathematical Sciences, Professor; Ed. (Inside book): O.P. Kochetova, Engineer; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Machinery and Instrument Manufacturing (Mashgiz): N.V. Pokrovsky, Engineer.

PURPOSE: This book is intended for engineers and technicians engaged in the application of ultrasonics in machinery manufacture and in other branches of industry.

COVERAGE: This is a collection of papers read at the first all-Union conference on the use of ultrasonics in industry. Attention is focused mainly on the description of ultrasonic equipment and on the use of ultrasound for the machining of hard materials and for flaw detection. The effect of ultrasound on metal-crystallization processes is also discussed. No personalities are mentioned. References accompany many of the papers.

SOV/46-5-2-13/34

AUTHORS:   Rozenberg, L.D.   and   Sirotyuk, M.G.

TITLE:     A Device for Producing Focused Ultrasound of High Intensity
           (Ustanovka dlya polucheniya fokusirovannogo ul'trazvuka
           vysokoy intensivnosti)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 2, pp 206-211
            (USSR)

ABSTRACT: The authors review briefly the published work on high-
          intensity ultrasonic sources with and without focusing
          (Refs.1-5).   The highest intensities reported so far
          (at 980 kc/s)  were of the order of 1 $kW/cm^2$  or  50 atm.
          The present paper describes a focusing device capable of
          reaching  60 - 70 $kW/cm^2$  ultrasonic intensities.   The
          device consists essentially of a radiator in the form of a
          resonant half-wave spherical aluminium shell  (radius
          314 mm,  angle of aperture  $\alpha_m = 70°$).   The radiator was
          excited by means of  200  small X-cut quartz plates stuck
          to its back.   The device is shown in Fig.1, where  1  is
          the shell,  2  are the quartz plates and  0  is the focus
Card 1/3  of the radiator.   Fig.3 shows the external form of the

A· Device for Producing Focused Ultrasound of High Intensity

device.   The working frequency was  500 kc/s  and the
design   voltage across the quartz plates was  7 kV.   The
plates were excited by means of an  8 kW  oscillator, whose
output stage used a  GKO-10  water-cooled valve  (tube).
The radiator shell was filled with outgassed water and the
pressure distribution at  its focus was found to follow
closely design  predictions.   The radius of the effective
focal area was  1.95 mm,  its area was  0.12 $cm^2$.   With
3.6 kV  applied to the quartz plates  (half the design
voltage)  the mean intensity in the focal area was  6 kW/
$cm^2$  and  18 - 20 kW/$cm^2$  at the centre of this area.   The
authors suggest that with  7 kV  applied to the quartz
plates an intensity of  60 - 70 kW/$cm^2$  should be obtainable
at the focal-area centre  (this intensity corresponds to
500 atm).   Acknowledgments are made to  V.P. Shesternev,
V.M. Pevtsov,  V.S. Kachanov  and  V.S. Mikhaylov  who
helped with the experiments.   There are 6 figures and 12
Card 2/3  references, of which 7 are Soviet, 4 English, and 1 German.

SOV/46-5-2-13/34

A Device for Producing Focused Ultrasound of High Intensity

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva  (Acoustics
            Institute, Ac. Sc. USSR, Moscow)

SUBMITTED: February 13, 1959.

Card 3/3

SOV/46-5-2-27/34

AUTHOR:   Sirotyuk, M.G.

TITLE:    Transformation of Acoustic Longitudinal Vibrations into
          Shear or Torsional Vibrations  (Prevrashcheniye akusti-
          cheskikh prodol'nykh kolebaniy v sdvigovyye ili
          krutil'nyye)

ABSTRACT:  The author describes a device for transformation of
           longitudinal vibrations into shear or torsional vibrations.
           The device is a metallic waveguide whose diameter is much
           smaller than the acoustic wavelength.  This waveguide has
           grooves cut in it which deepen gradually and become a spiral.
           The separation between two turns of the spiral decreases
           smoothly so that at the end of the guide the groove cuts
           the plane end at a small angle.  Such a device is shown
           in the figure, and it can be used for welding of thin
           metal sheets by means of an ultrasonic welder, model
           4770 (Ref.1).  For example, two sheets of aluminium of
           0.1 mm thickness can be welded in one second using a static
Card 1/2   force of several kg.

Transformation of Acoustic Longitudinal Vibrations into Shear or
Torsional Vibrations

SOV/46-5-2-27/34

    There is 1 figure and 1 Soviet reference.

ASSOCIATION: Akusticheskiy institut AN SSSR Moskva  (Acoustics
        Institute, Ac. Sc. USSR, Moscow)

SUBMITTED: March 10, 1959

Card 2/2

SIROTYUK, M. G.

Energy relations in a concentrator producing ultrasonic waves of
high intensity. Akust. zhur. 6 no.3:410-411 '60.    (MIRA 13:9)

1. Akusticheskiy institut AN SSSR, Moskva.
                    (Ultrasonic waves)

86358
S/046/60/006/004/007/022
B019/B056

6.8000 (3201, 1099, 1162)

AUTHORS:      Rozenberg, L. D., Sirotyuk, M. G.

TITLE:        The Sound Emission in a Liquid in the Presence of Cavitation

PERIODICAL:.  Akusticheskiy zhurnal, 1960, Vol. 6, No. 4, pp. 478 - 481

TEXT:  The measurements described here were carried out in a glass con-
tainer having a diameter of 40 cm and a height of 40 cm  For the purpose of
forestalling standing waves, the water was covered with a thick layer of
sound-absorbing resin. A magnetostrictive vibrator of the type НЭЛ-4
(NEL-4) served as a sound source; measurement was carried out by means of
a bariumtitanate pickup. As may be seen from the results shown in Fig. 1,
the radiation  resistance at low intensities of the 21 kc/sec radiation is
constant and has a value of $\overline{R}_{rad}/S = 1.5 \cdot 10^{5}$, where $\overline{R}_{rad} = 2W_a/v_m^2$ and S are
the area of the emitter, $W_a$ the power irradiated into the medium, and $v_m$ the
sound particle velocity. With beginning cavitation, the radiation
resistance decreases to roughly 30%. and remains constant with a further

Card 1/2

The Sound Emission in a Liquid in the Presence    S/046/60/006/004/007/022
of Cavitation .                                    86858
                                                   B019/B056

increase of intensity. The radiated intensity at first grows proportional
to the square of the sound particle velocity, during the decrease of the
radiation resistance of the liquid the intensity remains constant at about
1.5 watt/cm$^2$, and again begins to rise with the square of the sound
particle velocity on an increase of the sound particle velocity above
25 cm/sec. Here the proportionality factor is 1/3 as compared with the
first rise of intensity. This disproves the often used method of deter-
mining the power of a sound emitter by extrapolation of its power from the
region where no cavitation occurs to that where it does. There follow some
considerations concerning the finding of sound pressure spectrum. For this
purpose, the formation, the oscillation, and the annihilation of the
cavities must be known. A mean value with respect to time of sound
pressure may be determined from the reaction of the medium to the
oscillating emitter. The author thanks V. P. Shesternev for taking part in
the experiments. There are 2 figures and 3 references: 2 Soviet and 1 US.

ASSOCIATION:   Akusticheskiy institut AN SSSR, Moskva (Institute of
               Acoustics of the AS USSR, Moscow)

SUBMITTED:     August 3, 1960

Card 2/2

18 8300

24.1800

30056
S/046/61/007/004/014/014
B104/B102

AUTHOR:     Sirotyuk, M. G.

TITLE:      Behavior of cavitation bubbles at high ultrasonic intensities

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 4, 1961, 499-501

TEXT:   The author performed experiments in standing water by using 513-k.sec ultrasonics. In the focus of the concentrator the ultrasonic intensity reached several tens of $kw/cm^2$. It was checked whether the intensity of the shock wave starts to decrease when the ratio $2^{'}/T$ exceeds unity. The maximum bubble radius was determined photographically by using an 15C-2 (MBS-2) microscope in connection with an МФН-5 (MFN-5) micro-set. From results it follows that, up to a tension of 1.74 kv at the emitter, the time $T$ of the total collapse of bubbles is equal to a half-period of sound $(1/2T = 0.97 \cdot 10^{-6} sec)$. If the emitter voltage exceeds this value, the intensity of the shock waves formed by the collapse of cavitation bubbles will decrease. The shock wave intensity increases with increasing bubble radius. Destruction of aluminum by ultrasonics as a function of $2^{'}/T$
Card 1/2

SIROTYUK, M. G.

"Obtaining ultrasonic frequencies of exceptionally high intensities."

report presented at the Intl Symp on Ultrasonics Application, Bratislava, CSSR, 6-12 Sep 62.

ISAKOVICH, M. A. and SILIN, M. M.

"A solid resonant device for ultrasound focusing"

report submitted for the 4th Int'l. Congress of Acoustics,
Copenhagen, Denmark, 21-28.

Acoustic Institute of the Academy of Science U.S.S.R., Moscow.

2

SIROTYUK, M. G.

"On a double temperature jump associated with the onset of cavitation"

report submitted for the 4th Intl. Congress of Acoustics,
Copenhagen, Denmark, 21-28 Aug 1962.

Acoustic Inst. of Acad. of Sci. U.S.S.R., Moscow.

AUTHOR:        Sirotyuk, M. G.

TITLE:         A focussing ultrasonic solid-material concentrator

PERIODICAL:    Akusticheskiy zhurnal, v. 8, no. 1, 1962, 124-128

TEXT:  In some cases focussing of sound by means of solids with subsequent
transmission of the focussed sound into a liquid is more advantageous than
focussing by means of the liquid to be studied.  Owing to the existence of
many superfluous forms of oscillation the effectiveness of various
concentrators studied by the author is low.  M. A. Isakovich (Akust. zh.,
1962, 8, 1, 132-136) proposed a sphere for the production of a symmetri-
cally converging wave front whose cavity contains the liquid to be studied.
The cophasal excitation of the surface of such a sphere, e.g., by a
piezoelectric mosaic; produces purely radially symmetrical oscillations.
If the diameter of this internal cavity is the integral odd multiple  of
the number of half-waves, then the maximum pressure acts in the center and
the pressure node lies on the boundary of the cavity.  The running wave
removes energy from the cavity.  The amplification factor of such a
Card 1/4

A focussing ultrasonic solid- ...

S/046/62/008/001/013/018
B125/B104

concentrator is, according to M. A. Isakovich (Akust. zh., 1962, $\underline{8}$, 1, 132-136), $K = b/a\epsilon$, where b and a are the radii of the sphere and of the cavity respectively, and $\epsilon$ is the tangent of the loss angle in the liquid. $X$ The author verified these considerations with an aluminum sphere which piezoelectric mosaic (radius: 100 mm, radius of the spherical cavity: 7.5 mm) had been glued and which had two cone-shaped sections. Such a resonator operates most intensively near the 18th harmonic of the radial oscillations and somewhat less intensively near the neighboring harmonics. The two series of peaks of the frequency characteristics of the concentrator with distances of ∼33 and ∼100 kilo-cycles each belong to the radial oscillations of the aluminum sphere and the cavity respectively. The frequencies are proportional to the numbers of the harmonics. The disagreement between the resonances of the sphere and of the cavity which strongly reduces the total amplification factor of the concentrator could not be eliminated. But even without such an agreement the amplification factor for production of a cavitation in the cavity is sufficiently large. At 543, 561, 593, 628, and 640 kilo-cycles the cavitation was formed when approximately 15-25 v were applied to the piezoelectric mosaic. The technically difficult measurement of the amplification factor

Card 2/4

A focussing ultrasonic solid- ...

is not discussed. The Q-factor of the concentrator for a water-filled cavity is $Q_1 = 59.3$ and for an empty cavity $Q_2 = 85$.

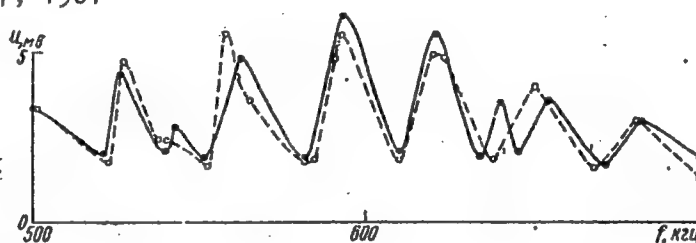$\eta = 1 - (Q_2 Q_1 f_2 / Q_2 f_1) \simeq 30\%$ follows from $Q_1$ and $Q_2$ for the transformation coefficient of the added power to the power scattered into the water. L. D. Rozenberg and M. A. Isakovich are thanked for useful advice. There are 7 figures and 4 Soviet references.

ASSOCIATION:    Akusticheskiy institut AN SSSR Moskva (Acoustics Institute of the AS USSR Moscow)

SUBMITTED:    July 7, 1961

Fig. 6

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S/046/62/008/002/010/016
B104/B138

AUTHOR:     Sirotyuk, M. G.

TITLE:      Experimental study of the development of ultrasonic cavitation at 500 kc/sec

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 2, 1962, 216 - 219

TEXT:  The development of cavitation was studied in stale water at room temperature and in carefully degassed distilled water, using a super-high-speed camera.  The ultrasonic concentrator developed by the author and L. D. Rozenberg (Akust. zh., 1959, 5, 2, 206 - 211) was used, and each of 60 successive ultrasonic vibration cycles could be photographed.  In the focus the mean sound intensities were between 2,000 and 12,000 $w/cm^2$, the pulse heights were 8,000 to 48,000 $w/cm^2$, and the maximum pressures were 160 to 380 atm.  The development of cavitation was studied with a microscope and by listening to the cavitation noise received on a hydrophone. Results:  (1) For stale water, which contains small air bubbles, the cavitation threshold lies at 160 atm; for degassed water it rises to 380 atm.  (2) Cavitation does not develop in the center of the focus.  It not only requires high pressure but also a small number of nuclei.  (3) After

Card 1/2

Experimental study of the...                S/046/62/008/002/010/016
                                            B104/B138

one or several vibration periods a nucleus may be transformed into a
cavitation region with a diameter some tenths of a millimeter. This region
grows from cycle to cycle, and after a few seconds its diameter is
several millimeters.  L. D. Rozenberg is thanked for his interest.  There
are 1 table and 5 figures.

ASSOCIATION: Akusticheskiy institut AN SSSR Moscow (Acoustics Institute
             AS USSR, Moscow)

SUBMITTED:   June 4, 1961

Card 2/2

SIROTYUK, M.G.

Ultrasonic cavitation; review.  Akust.zhur.  8  no.3:255-272 '62.
(MIRA 15:11)

1. Akusticheskiy institut AN SSSR, Moskva.
(Ultrasonic waves)    (Cavitation)

ROZENBERG, L.D.; SIROTYUK, M.G.

A concentrator for generating high-intensity ultrasonic vibrations
at a frequency of 1 Mc.   Akust. zhur.  9  no.1:61-65  '63.

(MIRA 16:5)

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound—Apparatus)

S/046/63/009/001/026/026
B104/B186

AUTHOR:     Sirotyuk, M. G.

TITLE:      International Symposium on the Utilization of Ultrasound

PERIODICAL: Akusticheskiy zhurnal, v. 9, no. 1, 1963, 131 - 132

TEXT: The Czechoslovakian Scientific-technical Society held a Symposium
on the Utilization of Ultrasound in Bratislava from September 6 to 12, 1962.
Besides the Czechoslovakian scientists, representatives of 11 countries
attended the Symposium (USSR, China, Poland, Hungary, Rumania, Bulgaria,
GDR, FRG, USA, France, Austria). The members of the Soviet delegation were:
O. I. Babikov, A. M. Ginberg, Yu. I. Kitaygorodskiy, M. G. Sirotyuk.  43
reports on flaw detection and on the utilization of ultrasound in medicine
and biology were read. The Symposium was opened by a representative of
the Slovakian Council of the Czechoslovakian Scientific-technical Society, ,
I. Stanek, who emphasized the great value of Ultrasound Techniques in
science and industry. O. I. Babikov reported on ultrasound inspection
methods and instruments. M. G. Sirotyuk spoke on the generation of ultra-
sound vibrations of super-high intensities. S. Urban (Czechoslovakia) dis-
cussed the cleaning of semiconductor radio elements by ultrasound.
Card 1/2

International Symposium on...

S/046/63/009/001/026/026
B104/B186

H. Hagedorn (GDR) and I. Pav (Czechoslovakia) reported on the Polman-type ultrasound whistle. I. Obraz (Czechoslovakia) showed a method to compensate the intensity variations of a reflected signal, which has great importance in ultrasound flaw detection. V. Payevski (Poland) investigated the dependence of pulse duration on converter properties and material. M. Tatar (Czechoslovakia) described new ultrasound therapy apparatus. I. Khasik (Poland) and D. Kamotsi (Hungary) described ultrasound therapy of rheumatism, of gynecological diseases, etc. I. Grazdira (Czechoslovakia) reported on the alterations in blood caused by ultrasound. S. Vel'gos (Czechoslovakia) discussed the use of ultrasound in stomatology. Visits were made to the Institute of Mechanization and Automation in Nové Město nad Váhom, the laboratory of the Department of Physics of the Polytechnic Institute in Prague and the Ultrasound Laboratory in the Factory imeni V. I. Lenin (Škoda).

Card 2/2

L 17241-63          BDS/EWT(1)/EWP(k)/EWP(q)/EWT(m)—AFFTC/ASD—Pf-4   JD

ACCESSION NR: AP3005636                     S/0046/63/009/003/0395/0396

AUTHOR: Sirotyuk, M. G.

TITLE: Session of the scientific committee on supersonics

SOURCE: Akusticheskiy zhurnal, v. 9, no. 3, 1963, 395-396

TOPIC TAGS: supersonics, emulsion, aerosol

ABSTRACT: A session of the Scientific Committee on Ultrasonics was held on April 27-28, 1963 at the Otdeleniye fiziko-matematicheskikh nauk AN SSSR. The meetings were dedicated to the problems and processes involved in the formation of emulsions and aerosols in an ultrasonic field. The session was opened by L. D. Rosenberg, chairman of the Scientific Committee on Ultrasonics, who noted that these processes are not fully understood. Nine other speakers read reports relevant to the subject of applying ultrasonics in science and technology. Several of the reports were followed by spirited discussions. The session made it possible for the participants to analyze a number of controversial or poorly understood aspects of the ultrasonic processes and to clarify the physical aspects of these processes. ASSN: Division of Physics and Mathematics, Academy of Sciences, SSSR

Card 1/2

L 17805-65    EWT(1)    AEDC(a)/ASD(m)-3/ASD(p)-3/ASD(a)-5/ASD(f)-2/AS(mp)-2/
BSD/AFETR/ESD(gs)
ACCESSION NR:  AP4049296                    S/0046/64/010/004/0465/0469

AUTHOR:  Sirotyuk, M. G.

TITLE:  Energy balance of sound field in the presence of cavitation

SOURCE:  Akusticheskiy zhurnal, v. 10, no. 4, 1964, 465-469

TOPIC TAGS:  acoustic field, cavitation, acoustic measurement

ABSTRACT:  In view of the fact that a microphone placed in a cavita-
tional field cannot sense the entire spectrum of the shock wave pro-
duced upon collapse of the cavitational bubble, the author shows, on
the basis of earlier deductions by F. E. Borgnis (J. Acoust. Soc.
America, 1953, v. 25, 3, 546-548), that in the presence of cavitation,
intense streams are produced in the liquid, with an energy equal to
the acoustic energy expended to produce the cavitation.  A method of
measuring this energy is proposed, based on using a radiometer and a
sound-transparent membrane which would transmit the sound energy and

Card  1/3

_4_

L 17805-65
ACCESSION NR:   AP4049296

not the constant stream. Experiments were made at 500 kcs in the
focal plane of a focusing concentrator described by the author else-
where (with L. D. Rozenberg, Akust. zh. 1960, v. 6, no. 4, 478-481).
This produced strong cavitation at appreciable distance from the ra-
diating source.  An equal-arm cup balance was used as the radiometer.
The results show that at the intensities prevailing in ordinary ultra-
sonic radiators, the power expended in the production of the acoustic
streams reaches about 20% of the total radiation energy.  It is pos-
sible to produce in focusing concentrators conditions under which all
the radiated energy goes over into cavitation.  "The author thanks
L. D. Rozenberg for a discussion of the results, and V. I. Kononov
and N. I. Shmelev for help with the experiments."  Orig. art. has:
2 figures.

ASSOCIATION:  Akusticheskiy institut AN SSSR, Moscow (Acoustics In-
stitute AN SSSR)

Card   2/3

L 17805-65

ACCESSION NR:   AP4049296                                             0

SUBMITTED:   22Jan64                                    ENCL:   00

SUB CODE:   GP              NR REF SOV:   005          OTHER:   003

Card   3/3

L 12067-66   EWT(1)/EPF(n)-2/ETC(m)   WW/GG

ACC NR: AP5021481                SOURCE CODE: UR/0046/65/011/003/0380/0386

AUTHOR: Sirotyuk, M. G.

ORG: Acoustics Institute AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Cavitation strength of water and the distribution of the cavitation nuclei in it

SOURCE: Akusticheskiy zhurnal, v. 11, no. 3, 1965, 380-386

TOPIC TAGS: cavitation, water, acoustic theory

ABSTRACT: The author presents the calculated dependence of the strength of the liquid on the radius of the cavitation nuclei contained in it (in the form of bubbles or solid non-wetting particles), and the frequency dependence of the cavitational strength of water which is derivable with dependence. The formulas derived are checked against experiments on the determination of the number of nuclei per unit volume of stagnant distilled water, in which cavitation nuclei are produced by focusing concentrators, as described in earlier papers by the author (with L. D. Rozenberg, Akust. Zh. v. 5, 2, 206 -- 211, 1959 and v. 9, 1, 61 -- 75, 1963). The method of determining the cavitation threshold

Card   1/2                    UDC: 534.29/532.528

L 12067-66

ACC NR: AP5021481                                                                3

was similar to that used by D. Messino et al. (J. Acoust. Soc. Am.,
1963, v. 35, 10, 1575 -- 1583). The reasons for the large discrepancy
between values obtained by different investigators is discussed. It is
concluded that the distribution of the cavitation nuclei in the form of
bubbles or solids is quite uneven in distilled water with the number of
nuclei of small radius (less than $10^{-6}$ cm) approximately $10^5$ times
larger than the number of large-radius nuclei (greater than $10^{-4}$ cm).
This unevenness leads to a dependence of the cavitation strength of
water on the volume of the irradiated liquid. Failure to take this
distribution into account has caused the great discrepancies in the
results of various authors. Author thanks L. D. Rozenberg for useful
advice. Orig. art. has: 3 figures, 3 formulas, and 2 tables.

SUB CODE: 20/  SUBM DATE: 29Jul64/    NR REF SOV: 006/  OTH REF: 007

Card  2/2

L 20641-66   EWT(1)/EWP(m)/EWT(m)/EWA(d)/EWP(t)/EWA(h)   IJP(c)   JD/WW/WB
ACC NR:   AP6007998      *(N)*           SOURCE CODE:   UR/0046/66/012/001/0087/0092

AUTHOR:  Sirotyuk, M. G.

ORG:  Acoustic Institute AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE:  Effect which the temperature and gas content of the fluid have on cavitation processes

SOURCE:  Akusticheskiy zhurnal, v. 12, no. 1, 1966, 87-92

TOPIC TAGS:  cavitation, shock wave analysis

ABSTRACT:  The author determines the intensity of a shock wave from the cavitation damage to a small aluminum cylinder placed in the cavitation zone. The relative intensity of the shock waves produced by cavitation bubbles was evaluated from the difference in weight of the cylinder before and after cavitation. The experiments were conducted at a constant acoustic pressure and various temperatures in ordinary water and in degassed distilled water. A ferrite transducer was used with a frequency of 28.5 Kc and an intensity of about 2 w/cm$^2$. It was found that the intensity of the shock wave which accompanies the collapse of cavitation bubbles may be

UDC:  534.29/532.528

Card 1/3

L 20641-66

ACC NR: AP6007998

reduced by decreasing the temperature and gas content of the liquid. This reduces the pressure of the vapor-gas mixture inside the cavitation bubbles and attenuates the damping effect which accompanies collapse of these bubbles. According to Khoroshev, the following expression may be used for determining the pressure of a shock wave which accompanies the collapse of an actual cavitation bubble in water containing a vapor-gas mixture:

$$p_m = P \frac{\delta}{Z^4} = \frac{P_n}{Z^4},$$

where $P$ is the hydrostatic pressure, $P_n$ is the pressure inside the bubble at maximum radius $R_{max}$, and $Z = R_{min}/R_{max}$ is the dimensionless minimum radius of the bubble. This formula agrees satisfactorily with the experimental data obtained in this paper. Cavitation damage to the aluminum is a linear function of the intensity of shock waves and may be used for a relative estimate of this intensity. Luminescence and chemical reactions due to oxidation of ions take place only when there is gas in the cavitation bubble. This shows a direct relationship between luminescence and chemical reactions which may produce radiation. Luminescence brightness for a given sonic pressure increases with the air content in the cavitation bubbles, while

Card 2/3

L 20641-66
ACC NR: AP6007998

the intensity of shock waves decreases. Luminescence brightness and the yield of oxidation reaction products are not always an objective characteristic for the intensity of shock waves which accompany the collapse of cavitation bubbles. Orig. art. has: 6 figures, 2 formulas.
[14]

SUB CODE: 20/     SUBM DATE: 26Nov64/     ORIG REF: 007/     OTH REF: 006
ATD PRESS: 4224

Card 3/3 BK

L 36542-66  EWT(1)/EWT(m)/T/EWP(t)/ETI/EWP(k)   IJP(c)   WH/JD/GG/WB

ACC NR: AP6016831          (N)          SOURCE CODE:  UR/0046/66/012/002/0231/0238

AUTHOR:  Sirotyuk, M. G.

ORG:  Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE:  Evolution of the processes of ultrasonic cavitation at increased hydrostatic pressures

SOURCE:  Akusticheskiy zhurnal, v. 12, no. 2, 1966, 231-238

TOPIC TAGS:  cavitation, ultrasonic effect, pressure effect, shock wave propagation, water, luminescence , HYDROSTATIC PRESSURE

ABSTRACT:  This is a continuation of earlier work (Akust. zh. v. 12, no. 1, 87, 1965 and earlier) dealing with the relation between shock waves and cavitation bubbles in a liquid.  The present paper is devoted to experiments on the determination of the dependence of the intensity of the shock wave during the collapse of cavitation bubbles on the hydrostatic pressure.  The experiments were carried out in stagnant distilled water at 23°, using a focusing concentrator described in an earlier paper by the author (Akust. zh. v. 8, no. 1, 124, 1962).  The results have shown that when static pressure increases the pressure in the shock wave during the collapse of the bubble can be raised by a factor as high as 200.  The change in the pressure is due to the decrease in the air-content parameter, defined as the pressure ratio at constant temperature.  Experiment has also confirmed a conclusion reached theoretically in the earlier paper that the luminescence brightness increases with in-

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UDC: 534.29: 532.52

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creasing air content in the cavitation bubbles.  The increase in pressure during the final stage of collapse of cavitation is in satisfactory agreement with an expression derived in earlier work.  The author thanks L. D. Rozenberg for a discussion of the results and also O. N. Shumilov for help with the experiments. Orig. art. has:  8 figures and 8 formulas.

SUB CODE: 20/    SUBM DATE: 01Feb65/    ORIG REF: 007/    OTH REF: 003

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Orig Pub: Obaly, 1956, 2, No 1, 14-18.

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          icillium, Aspergillus). It is proposed to dis-
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